

What is claimed is:

- 1    1.    A method for identifying pathogens, comprising:  
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3       providing an image;  
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5       processing the provided image with an image  
6           segmentation algorithm to isolate at least one  
7           segment of the provided image that has a feature  
8           that is of interest; and  
9  
10       comparing the isolated segment of the provided image to  
11           a plurality of reference images to determine if the  
12           isolated segment corresponds to any of the reference  
13           images.  
14
- 15   2.    The method according to claim 1 wherein the step of  
16   providing the image comprises acquiring the image.  
17
- 18   3.    The method according to claim 2 wherein the step of  
19   acquiring the image comprises processing the acquired  
20   image to provide pertinent portions of the acquired  
21   image.  
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1 4. The method according to claim 2 wherein the step of  
2 acquiring the image comprises digitizing the acquired  
3 image.

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5 5. The method according to claim 4 wherein the step of  
6 acquiring the image further comprises digitally enhancing  
7 the digitized image.

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9 6. The method according to claim 5 further comprises  
10 storing the digitally enhanced image in a data storage  
11 device.

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13 7. The method according to claim 1 wherein the provided  
14 image comprises an image of a specimen.

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16 8. The method according to claim 1 wherein the provided  
17 image comprises a dental x-ray.

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19 9. The method according to claim 1 wherein the image  
20 segmentation algorithm comprises a recursive hierarchical  
21 segmentation algorithm.

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23 10. The method according to claim 1 wherein the step of  
24 comparing the isolated segment to the plurality of

1 reference images comprises:

2

3 processing the isolated segment with a data mining  
4 algorithm to extract particular image data from the  
5 isolated segment; and

6

7 processing the extracted particular image data and each  
8 of the reference images with a optical recognition  
9 algorithm to determine if the extracted particular  
10 image data matches any of the reference images.

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12 11. The method according to claim 10 further comprising:

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14 providing a display device; and

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16 displaying the extracted data and the results of  
17 processing the extracted image data and each  
18 reference image.

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20 12. The method according to claim 1 further comprising  
21 providing a data base having a plurality of reference  
22 images stored therein.

23 13. A system for identifying pathogens, comprising:

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1 a device to provide an image;

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3 a data base having at least one reference image stored  
4 therein; and

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6 an image processing resource to (i) process the  
7 provided image with an image segmentation algorithm  
8 to isolate at least one segment of the provided  
9 image that has a feature of interest, and (ii) to  
10 compare the isolated segment of the provided image  
11 to the reference image to determine if the isolated  
12 segment corresponds to the reference image.

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14 14. The system according to claim 13 wherein the device  
15 comprises a device to acquire the image.

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17 15. The system according to claim 14 wherein the device  
18 comprises a digitizer to digitize the provided image.

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20 16. The system according to claim 15 wherein the device  
21 further comprises an enhancer device to digitally enhance  
22 the digitized image.

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1 17. The system according to claim 16 further comprising  
2 a data storage resource for storing the digitized images.

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4 18. The system according to claim 13 wherein the  
5 provided image comprises an image of a specimen.

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7 19. The system according to claim 13 wherein the  
8 provided image comprises a dental x-ray.

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10 20. The system according to claim 13 wherein the image  
11 segmentation algorithm comprises a recursive hierarchical  
12 segmentation algorithm.

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14 21. The system according to claim 13 wherein the image  
15 processing resource is configured to process the isolated  
16 segment with a data mining algorithm to extract image  
17 data from the isolated segment.

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19 22. The system according to claim 21 wherein the image  
20 processing resource processes the extracted image data  
21 and the reference image with a optical recognition  
22 algorithm to determine if the extracted image data  
23 matches the reference images.

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1 23. The system according to claim 22 further comprising  
2 a display device to display the extracted data and the  
3 results of processing the extracted image data and the  
4 reference image with the optical recognition algorithm.  
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6 24. The system according to claim 13 wherein the image  
7 processing resource comprises a paralleling processing  
8 resource.  
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10 25. The system according to claim 24 wherein the  
11 paralleling processing resource comprises a Beowulf  
12 cluster.  
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14 26. The system according to claim 13 wherein the device  
15 comprises a video camera.